

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

LAND RECONSTRUCTION, CURRENTLY MINED LAND

(Acre)
CODE 544



DEFINITION

Restoring currently mined land to an acceptable form and planned use.

PURPOSE

- Prevent negative impacts to soil, water and air resources in and near mined areas.
- Restore the quality of the soils to their pre-mining level.
- Maintain or improve the visual quality of the landscape.

CONDITIONS WHERE PRACTICE APPLIES

This standard applies to currently mined land. It includes the identification, removal, stockpiling and replacement of soil material, and revegetation. This standard also applies to nearby areas adversely affected by the mining activities.

CRITERIA

General criteria applicable for all purposes

Plans must comply with all applicable Federal, State and local laws and regulations relating to mining and reclamation. Applicable laws and regulations include but are not limited to the following:

- Surface Mining Control and Reclamation Act of 1977 (SMCRA), 30 U.S.C. 1201 et seq.
- Federal regulations related to the reclamation of prime farmland, including, 30 CFR 785.17, 816.22, and Part 823.
- Federal Register/Vol. 64, No. 124, Tuesday, June 29, 1999/Notices, pages 34770-34778.
- 30CFR780.15 - Air pollution control plan.
- 30CFR701.5 - Definitions: Fugitive dust.

Information on the existing state of Florida regulations regarding mining and reclamation can be found at Florida Dep. of Environment Protection website

(<http://www.dep.state.fl.us/water/mines/rules.htm>).

Impact to cultural resources, wetlands, and Federal and State protected species needs to be avoided or minimized to the extent practical during planning, design and implementation of this conservation practice in accordance with established National and Florida NRCS policy, General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and The

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [electronic Field Office Technical Guide](#).

National Environmental Compliance Handbook (NECH).

Dust control. Control the generation of particulate matter and fugitive dust during removal and replacement of soil and other earthy materials. Detail the practices and activities necessary for dust control in the plans and specifications.

Site preparation. Properly identify areas to be preserved, including those containing trees, vegetation, stream corridors, natural springs or other important features.

Remove trees, logs, brush, rubbish and other debris from disturbed areas that will interfere with reconstruction and reclamation operations. Dispose of these undesirable materials so they do not create a resource problem or interfere with reclamation activities and the planned land use.

Land shaping and erosion and sediment control. Shape the land surface to provide adequate surface drainage and to blend into the surrounding topography. Use erosion control practices to reduce slope lengths where sheet and rill erosion will exceed acceptable levels.

Use sediment trapping practices such as filter strips, riparian forest buffers, contour buffer strips, sediment basins or similar practices to trap sediment before it leaves the project site. Establish drainage ways with sufficient capacity and stability to carry concentrated runoff from the reclaimed area into receiving streams without causing erosion.

See Florida NRCS Conservation Practice Standard Clearing and Snagging, Code 326; Contour Buffer Strips, Code 332; Land Clearing, Code 460; Land Smoothing, Code 466; Riparian Forest Buffer, Code 391; Spoil Spreading, Code 572; or Streambank & Shoreline Protection, Code 580, and their accompanying guidance for more information.

Establishment of vegetation. Do site preparation, planting and seeding at a time and in a manner to ensure survival and growth of the selected species. In the plans and specification, identify the criteria for successful establishment of vegetation such as minimum percent ground/canopy cover, percent survival or stand density.

Apply soil amendments and plant nutrients as appropriate, according to soil test requirements. See Florida Conservation Practice Standard for Nutrient Management, Code 590, for further guidance. If the recommended rate exceeds the criteria in Florida Conservation Practice Standard for Nutrient Management, Code 590, use appropriate mitigating practices to reduce the risk of nutrient losses from the site.

Select plant materials suitable for the specified end land use according to local climate potential, site conditions, and FL NRCS criteria. Identify in the plans and specifications the species, rates of seeding or planting, minimum quality of planting stock (e.g., pure live seed or stem caliper), and method of establishment. Use only viable, high quality seed or planting stock.

For information regarding site preparation, species selection, seeding rates, and post planting management see:

- Florida NRCS Conservation Practice Standards Critical Area Planting, Code 342; Forest Site Preparation, Code 490; Filter Strip, Code 393; Field Border, Code 386; Pasture and Hay Planting, Code 512; Range Seeding, Code 550; Tree/Shrub Establishment, Code 612;
- their accompanying guidance information; and
- Florida NRCS Plant List for Conservation Alternatives, Florida NRCS Field Office Technical Guide Section II (G) (1).

Additional Criteria to Restore the Quality of Soils to Their Pre-mining Level

Removal of material for soil reconstruction. Complete a detailed soil survey of the proposed mine area if suitable soil information is not available. Use this information to determine the extent and location of prime farmland soils.

Remove all upper soil horizons that are suitable for reconstruction before blasting, mining or any surface disturbance other than removal of woody plants and debris.

If the area is prime farmland, follow a reclamation plan prepared according to 3-CFR Part 823.

For soils that are not prime farmland, develop a reclamation plan prepared according to 30 CFR Parts 780 and 816.

Separate soils identified with high electrical conductivity, calcium carbonate, sodium or other restrictive properties and treat if practical.

Removal of overburden material for use as topsoil. Selected overburden material can be substituted for or added to the material in the A and B horizons if field observations and/or chemical and physical laboratory analyses demonstrate that the overburden material, or a mixture of overburden and original topsoil, is suitable. Analyze overburden materials for pH, sulfide content, organic matter, nitrogen, phosphorus, potassium, sodium absorption ratio, electrical conductivity, texture, and available water capacity analysis. If the overburden material is determined to be suitable for topsoil, remove and separate from other material and replace according to the requirements specified in this standard.

Storage of soil material. Stockpile soil materials to be used as topsoil until they are needed for reclamation. Locate stockpiles so they are protected against wind and water erosion, dust generation, unnecessary compaction and contamination by noxious weeds, invasive species, or other undesirables.

Replacement of soil material. When placing cover materials, treat graded areas to eliminate slippage surfaces and promote root penetration.

Spread topsoil so that the position and thickness of each horizon is equivalent to those in the undisturbed soil without causing excess compaction.

The moist bulk density and soil strength of the reconstructed soil must support plant growth at a level equivalent to that of a similar layer in undisturbed soil.

Additional Criteria to Maintain or Improve the Visual and Functional Quality

Reclaim the site to maintain or improve visual quality based on the scenic quality of the reclaimed site as well as the function of the site for the end land use. Plan the reclamation to be compatible with the topography and landcover of the adjacent landscape. Focus on area of high public visibility, and those offering direct or indirect human and wildlife benefits.

Grade and shape spoil piles and borrow areas to blend with adjacent landscape topography to the extent practical.

Develop a planting plan that mimics the species, arrangement, spacing and density of plants growing on adjacent landscapes. Choose native species where practical. Arrange plantings to screen views, delineate open space, act as windbreaks, serve as parkland, wildlife habitat, or protect stream corridors.

CONSIDERATIONS

Prior to mining, develop a conservation plan that can be used by the landowner as a guide for the development of a reclamation plan with the mining company.

Improper locations for the storage of soil material, access roads and permanent impoundments can cause serious erosion and sedimentation problems. Locate these activities where runoff and sedimentation can be more easily controlled before it enters streams or leaves the site.

Soil permeability is often a problem on reclaimed soils. Improve soil permeability after placing backfill material by using tillage or deep ripping to decrease compaction and promote infiltration and root development. Do not plan practices that promote infiltration if seepage through cover materials has the potential to increase acid mine drainage.

Overburden materials are often toxic to plants. To determine the best materials to plant, conduct field-site or greenhouse grow-outs to determine the feasibility of using overburden materials.

The reclamation of mined lands provides an opportunity to increase carbon sequestration. Choose species such as deep-rooted perennial grasses and trees to increase the carbon sequestration potential of the reclaimed site.

Maintenance activities will need to be done on a regular basis after the initial reclamation to ensure success. Include stabilized access roads to allow access to the site without causing erosion problems

Reclaimed mine areas can provide important wildlife habitat. Improve the potential for wildlife habitat by establishing diverse vegetation types, including water in the reclaimed landscape, increasing edge effect and diverse land forms. Avoid monocultures of vegetation if possible.

Reclaimed soils are often low in organic matter. The use of organic soil amendments such as manure, compost, mulch or sewage sludge can contribute to the success of vegetative establishment by increasing soil organic matter.

Make an effort to utilize native, non-invasive vegetative species. Consideration should be given to washing all equipment utilized in the project activities before leaving the site.

PLANS AND SPECIFICATIONS

Prepare plans and specification for each treatment unit according to the Criteria, Considerations, and Operation and Maintenance sections of this standard.

At a minimum, include the following information in the plans and specification for the reclamation area:

- Map showing location of mining operation
- Plans showing the final grading to take place on the reclamation area
- The location of topsoil stockpiles
- Detailed information on the location and installation of erosion and sediment control practices
- Detailed information on soil amendments to be applied to the site

- Detailed information on the species to be used with accompanying seeding/sprigging rates, site preparation, planting dates, care, and handling.

OPERATION AND MAINTENANCE

Prepare an Operation and Maintenance plan that provides specific details concerning conservation practices identified in the reclamation plan. As a minimum include the following items in the operation and maintenance plan.

- Periodic checking of the site for areas where settlement may adversely affect drainage and land use.
- Periodic checking of the site for bare spots, eroded areas, areas of excessive settlement and other areas where initial attempts to establish vegetation were not successful.
- Periodic soil testing and checking of vegetation to determine if additional soil amendments are needed.
- Maintenance of access roads.
- Maintenance of drainage structures and channels.
- Use of proper grazing practices if applicable.
- Periodic checking of the site for noxious weeds and invasive species.
- Control of vehicular traffic to minimize disturbance to reclaimed areas.

REFERENCES

Soil Survey Division Staff. 1993. [Soil survey manual](#). Pp. 90-92. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

[National Cultural Resources Procedures Handbook](#). 2003. USDA, Natural Resources Conservation Service, Washington D.C.

[National Agronomy Manual](#), Part 501, Water Erosion. 2002. USDA Natural Resources Conservation Service, Washington D.C.

[National Agronomy Manual](#), Part 502, Wind Erosion. 2002. USDA Natural Resources Conservation Service, Washington D.C.

[Revised Universal Soil Loss Equation, Ver. 2 \(Rusle 2\)](#). 2004. USDA Natural Resources Conservation Service, Washington D.C.

[Wind Erosion Equation \(WEQ\) Guidance Document](#). 2003. USDA Natural Resources Conservation Service, Washington D.C.

[Landscape Design in Mined Land Reclamation](#), LAN-1, 1983, National Technical Information Service, USDA NRCS Conservation Engineering Division, Washington, D.C.

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